

Claim 25 (New): A process for the production of anionic water-in-water polymeric

dispersions comprising at least one finely dispersed, water-soluble and/or water-swellable

polymer A and a continuous aqueous phase, which phase contains an aliquot of at least 5 %

by weight, based on the total dispersion, of a polymeric dispersing agent B in which

monomers that are distributed in this aqueous phase are subjected to free-radical

polymerization and, on completion of said polymerization, the reaction mixture is

subsequently diluted with the residual amount of said dispersing agent B.

Claim 26 (New): A process as defined in claim 25, characterized in that said polymeric dispersing agent B comprises at least one functional group selected from the group consisting of ether groups, carboxyl groups, sulfone groups, sulfate ester groups, amino groups, amido groups, imido groups, tert-amino groups, and/or quaternary ammonium groups.

Claim 27 (New): A process as defined in claim 26, characterized in that said polymeric dispersing agent B is a cellulose derivative, polyvinyl acetate, starch, a starch derivative, dextran, polyvinylpyrrolidone, polyvinylpyridine, polyethylene imine, polyamine, polyvinylimidazole, polyvinylsuccinimide, polyvinyl-2-methylsuccinimide, polyvinyl-1,3-oxazolid-2-one, polyvinyl-2-methylimidazoline, and/or the respective copolymers thereof with maleic acid, maleic anhydride, fumaric acid, itaconic acid, itaconic anhydride,

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(meth)acrylic acid, salts and/or esters of (meth)acrylic acid and/or a (meth)acrylamide compound.

Claim 28 (New): A process as defined in claim 25, characterized in that said dispersing agent B is an anionic polymer composed of at least 30 % by weight of anionic monomers.

Claim 29 (New): A process as defined in claim 25, characterized in that said dispersing agent B has an average molecular weight M_w of not more than 250,000 g/mol.

Claim 30 (New): A process as defined in claim 25, characterized in that the aliquot of said dispersing agent B in the aqueous phase is equal to from 60 to 95 % by weight of the total weight of said dispersing agent B.

Claim 31 (New): A process as defined in claim 25, characterized in that at least one water-soluble polymeric dispersing agent B is used together with at least one water-soluble polyfunctional alcohol and/or its reaction product with fatty amines.

Claim 32 (New): A process as defined in claim 31, characterized in that the water-soluble polyfunctional alcohols used are polyalkylene glycols, block copolymers of propylene/ethylene oxide having molecular weights of from 50 to 50 000, low-molecular weight polyfunctional alcohols and/or their reaction products with fatty amines containing from 6 to 22 carbons in the alkyl or alkylene radical.

Claim 33 (New): A process as defined in claim 31, characterized in that said polymeric dispersing agent B is used together with at least one polyfunctional alcohol in amounts of from 5 to 50 % by weight, based on the total dispersion.

Claim 34 (New): A process as defined in claim 31, characterized in that said the ratio, by weight, of said polymeric dispersing agent B to said polyfunctional alcohol is in the range of from 1.00: 0.01 to 1.00: 0.5.

Claim 35 (New): A process as defined in claim 25, characterized in that polymer A is composed of anionic, non-ionic, amphiphilic, and/or cationic monomers.

Claim 36 (New): A process as defined in claim 25, characterized in that the anionic monomers used are

- a.) olefinically unsaturated carboxylic acids, carboxylic anhydrides, and watersoluble alkali metal salts, alkaline earth metal salts, and ammonium salts thereof,
- b.) olefinically unsaturated sulfonic acids and/or said water-soluble alkali metal salts, alkaline earth metal salts, and ammonium salts thereof,
- c.) olefinically unsaturated phosphonic acids and/or said water-soluble alkali metal salts, alkaline earth metal salts, and ammonium salts thereof, and
- d.) sulfomethylated and/or phosphonomethylated acrylamides and/or said watersoluble alkali metal salts, alkaline earth metal salts, and ammonium salts thereof.

Claim 37 (New): A process as defined in claim 25, characterized in that the non-ionic monomers used are monomers of the general formula (I)

$$CH_2 = C - C - N$$

$$R^2$$

$$R^3$$
(I)

in which

R¹ stands for a hydrogen radical or a methyl radical, and

containing from 1 to 5 carbon atoms, and

R² and R³ independently stand for hydrogen, or an alkyl or hydroxyalkyl radical

 R^2 or R^3 stands for an OH group.

Claim 38 (New): A process as defined in claim 25, characterized in that the amphiphilic monomers used are monomers of the general formula (II)

wherein Z₁ stands for O, NH, NR₄ wherein R₄ denotes alkyl containing from 1 to 4 carbons,

R₁ stands for hydrogen or a methyl radical,

R₄ stands for alkene containing from 1 to 6 carbons,

R₅ and R₆ independently stand for an alkyl group containing from 1 to 6 carbons,

R₇ stands for an alkyl radical, an aryl radical, and/or an aralkyl radical

containing from 8 to 32 carbons and

Z stands for halogen, pseudo-halogen, SO₄CH₃ or acetate, or monomers of the general formula (III)

$$CH_2 = C - C - Z_1 - (R_9 - O)_n - R_8$$

(III)

wherein

Z₁ stands for O, NH, or NR₄, wherein R₄ denotes alkyl containing from 1 to 4 carbons,

R₁ stands for hydrogen or a methyl radical,

R₃ stands for hydrogen, an alkyl radical, an aryl radical, and/or an aralkyl radical containing from 8 to 32 carbons,

R₉ stands for an alkylene radical containing from 2 to 6 carbons, and stands for an integer from 1 to 50.

Claim 39 (New): A process as defined in claim 25, characterized in that the cationic monomers used are compounds of the general formula (IV)

$$CH_2 = C - C - Z_1 - Y$$

$$0$$

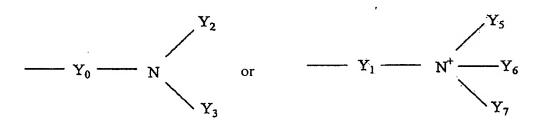
$$(IV)$$

wherein

R₁ stands for hydrogen or a methyl radical,

Z₁ stands for O, NH or NR₄ where R₄ stands for an alkyl radical containing 1 to 4 carbon atoms,

Y stands for one of the groups



wherein

 Y_0 and Y_1 stand for an alkylene radical or hydroxyalkylene radical containing 2 to 6 carbon atoms,

Y₂, Y₃, Y₄, Y₅, Y₆, Y₇, independently stand for an alkyl radical containing 1 to 6 carbon atoms, and

Z stands for halogen, acetate, or SO₄CH₃.

Claim 40 (New): A process as defined in claim 25, characterized in that the monomeric composition to be used for the production of said polymer A consists of anionic monomers, to an extent of from 0 to 100 % by weight, based on the total weight of monomers.

Claim 41 (New): A process as defined in claim 25, characterized in that polymer A has a M_w of >1,0 × 10⁶ g/mol.

Claim 42 (New): A process as defined in claim 25, characterized in that polymerization is carried out in the presence of a salt in an amount of not more than 3.0 % by weight, based on the total dispersion.

Claim 43 (New): A process as defined in claim 25, characterized in that the reaction mixture is cooled following polymerization and is subsequently diluted with the residual amount of said dispersing agent B.

Claim 44 (New): A process as defined in claim 25, characterized in that the reaction mixture is cooled to ≤ 35 °C.

Claim 45 (New): A process as defined in claim 25, characterized in that the reaction mixture is subsequently diluted with from 5 to 50 % of said dispersing agent B by weight, based on the total weight thereof.

Claim 46 (New): A water-in-water polymer dispersion whenever obtained as defined in claim 25.

Claim 47 (New): The method of using the water-in-water polymer dispersion as defined in claim 46 for solid/liquid separation in aqueous systems.

Claim 48 (New): The method of using the water-in-water polymeric dispersions as defined in claim 46 as an auxiliary in papermaking.

Claim 49 (New): The method of using the water-in-water polymer dispersion as defined in claim 46 in retention agent systems in papermaking.